

REMARKS

35 U.S.C. § 103(a)

Claims 1-6, 8, 10, 20, 24, and 26-28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hueting et al. (WO/01/69684 A2) in view of Nakamura (JP 2000-049245).

Applicant amends claim 1 to clarify that the first depression is the only depression of the field effect transistor in which the control region is arranged, as well as to show that the first depression is a straight trench. Support for this feature may be found in Figure 4, which shows straight trench 72 with length L1. Hueting, in contrast, shows a comb shaped trench (see Fig. 2).

In addition, Hueting relates to transistors for high currents. See Hueting, page 7, lines 31-32 (“typically the device may comprise many thousands of these parallel cells between the electrodes 33 and 34”). In contrast, switching transistors on word lines of memories, such as that of Nakamura, switch currents that are at least one order of magnitude smaller than the switching current of the transistor disclosed in Hueting. Accordingly, Applicant respectfully submits that one skilled in the art would not have been motivated to combine Hueting and Nakamura.

Further, Applicant submits that the asserted combinations do not disclose all the features of claims 1-3, 5, 8, 10, 20, 24, 26-28, as amended, and requests withdrawal of the rejection of these claims under 35 U.S.C. § 103(a).

35 U.S.C. § 103(a)

Claims 9 and 25, which each depend from claim 1, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hueting et al. (WO/01/69684 A2) and Nakamura (JP 2000-049245), and further in view of Degawa et al. (EP 0872895).

Claims 9 and 25 each ultimately depend from claim 1. As noted above, Hueting does not disclose all the features of claim 1. Degawa does not cure this deficiency. Degawa is relied to disclose a depression between the field-effect transistor and an adjacent electronic component that has a larger depth than the depression for the control region, as well as comparable widths between two depressions of the field-effect

transistor. The combination of Hueting, Degawa, and Nakamura does not disclose all the features of claim 1, or the claims that depend from claim 1, including claims 9 and 25.

For the reasons discussed above, the Applicant respectfully requests withdrawal of the rejection of claims 9 and 25 under 35 U.S.C. § 103(a).

New Claims

Applicant adds new claims 29-31. New claim 29 depends from claim 1 and shows that the field-effect transistor further includes a third depression, where the connecting region is between the second and third depressions. Support for this feature may be found in, for example, Figs. 1J, 2A, 2B, or 5. New claim 30 depends from claim 29 and shows that the third depression extends below a bottom edge of the second terminal region. The Office Action suggests that, referring to Fig. 1 of Hueting, the drain region 14 discloses the second terminal region. Hueting does not disclose or suggest a third depression, as claimed, extending below a bottom edge of the drain region 14.

New claim 31 shows that the field-effect transistor includes a bottom oxide between the control region and the electrically insulating region near the bottom of the first depression. Support for this feature may be found in Figure 1J (see reference 122), as well as in the Specification at least at page 11, lines 17-24, and page 12, line 30 – page 13, line 4. The bottom oxide at the bottom of the first depression promotes the neat deposition of the gate oxide in the region of the corners of the first depression and in the region of the lower edges of the first depression (Specification, page 13, lines 1-4).

Hueting does not disclose or suggest a bottom oxide between the control region and the electrically insulating region near the bottom of the first depression. The Office Action suggests, referring to Figure 1 of Hueting, that the gate trench 20 discloses the claimed first depression, that the gate electrode 11 discloses the claimed control region, and that the gate dielectric 22 discloses the claimed electrically insulating region. In Hueting there is no bottom oxide between the gate dielectric 22 and the gate electrode 11 near the bottom of the gate trench 20.

The addition of Nakamura or Degawa does not cure this deficiency. Nakamura is relied upon to disclose a field-effect transistor being a drive transistor at a word line or at a bit line of a memory cell array. Degawa is relied to disclose a depression between the field-effect transistor and an adjacent electronic component that has a larger depth than the depression for the control region, as well as comparable widths between two depressions of the field-effect transistor. None of the asserted references, whether alone or in combination, disclose all the features of claim 31.

CONCLUSION

Applicant amends claims 1 and 5, and cancels claims 4, 6, and 17, and adds claims 29-31. Applicant respectfully submits that the pending claims are patentable. Accordingly, Applicant requests withdrawal of the Rejection and issuance of a Notice of Allowance in the present case. The Examiner is respectfully requested to contact the undersigned in the event that a telephone interview would expedite consideration of the application.

Respectfully submitted,

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